W9UP Anachewer

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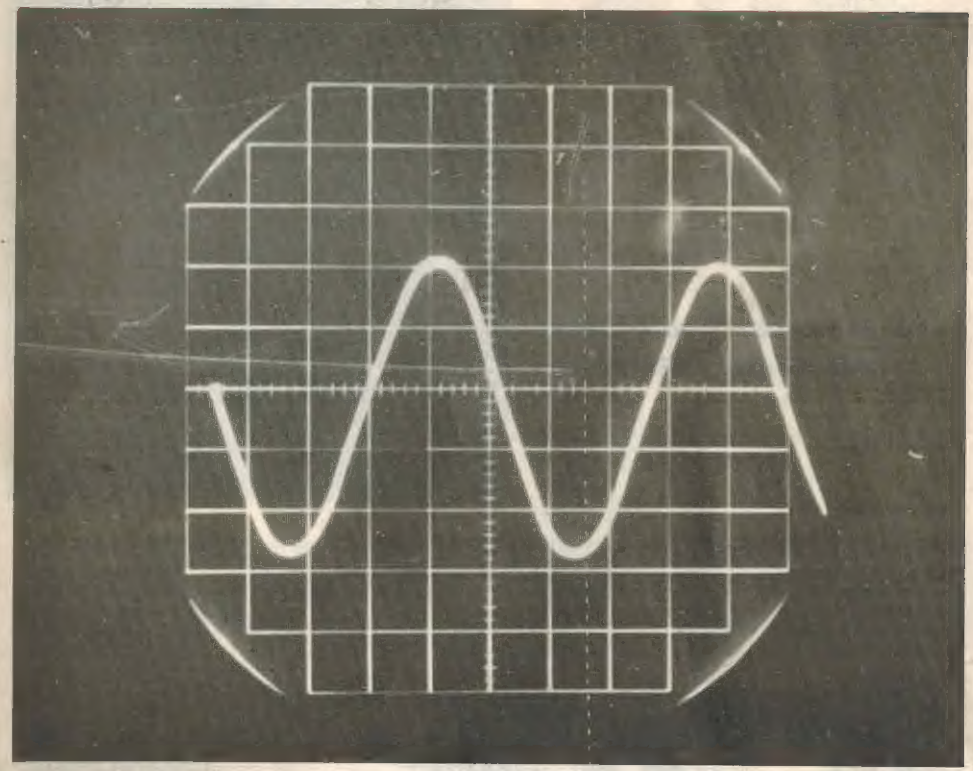

INDIANAPOLIS RADIO CLUB, INC.
2223 E. 74th Street
Indianapolis 20, Indiana

To: D. J. ANGUS, W9CYQ
1040 N. DELAWARE, #57
INDPLS. 2, IND.

Return Postage Guaranteed
Form 3547 Requested

The Indianapolis Radio Club meets on the 2nd and 4th Friday of each month at the Indianapolis Park Board Building located at 29th and Harding Streets. Meetings start promptly at 8:00 PM, E.S.T.

AMA-CHEWER STAFF

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Ama-Chewer is published monthly by and for I.R.C. and all Amateurs in this area. Non-Members of I.R.C. may subscribe at the rate of $1.00 per year.

Publication is on the 3rd Friday of each month, with all news items and ads due no later than the 1st Friday of each month.

Ham-Ads (5 line limit) are free to members and subscribers. Others may use this facility at the rate of 50 cents per ad.

Ama-Chewer welcomes the forwarding of information on coming events of other clubs in the area for publication in the program section.

PROGRAM REVIEW

After the IRC members waited a few minutes, they realized that Mr. Kryter was not going to be present to address the Club. Rumor has it that Mr. Kryter is on his honeymoon in the West Indies.

On very short notice, D. J. Angus, W9CYQ left his seat in the audience and proceeded to give a fine talk on Radio navigation principles and applications. D. J. explained that the loop antenna is the basis for direction finding and that it receives best off one edge and has a null when facing the station. He gave an example of finding a ship's location when somewhere off the Michigan coast on Lake Michigan. The station at Ludington transmits "H" on a modulated carrier, Manitowoc transmits "S", and Muskegon transmits "C" all on the same frequency but each station sends in sequence order. By geting bearing of each station and marking on the chart, the intersection of bearings are the location of the boat. A direction loop can have a special addition on one side to make it receive better in one direction and thus eliminate any possibility of being 180 degrees off in your direction reading. A metal ship has errors on the four quadrants and a correction curve is plotted for taking the actual readings.

LORAN, a well known term with the 160 meter boys, is used by larger boats when navigating the Atlantic, etc.. It determines a ship's location by measuring the time difference in receiving radio signals and looking them up in a special LORAN chart. Even on a clear day, a ship's captain knows exactly where he is located on his charts because at any minute change in weather can bring fog and then you must rely on the radio and compass readings. The port stations send CW signals such as "A" for three minutes, and in bad fog, the fog horn is also keyed from the CW signal. By listening for the end of the CW signal on the radio and couting until the end of the fog horn signal is heard, the distance from shore can be determined.

Example: If it takes the signal 30 seconds to reach the boat and @ 5 sec./mi. the boat is 6 miles off shore.

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During bad fog a boat is required to sound it's fog horn 3 blasts every minute. The larger ships on Lake Michigan have radar. In bad fog you can contact them by radio on 2182 KC and they will give you a reference bearing from their ship. 2003 KC is the party line on ship radio but once you call in, you usually shift to a different transmitter frequency. D. J. Angus gave several example problems of running off a 45 degree triangle etc., to measure your distance from off shore and how you measure the angle between your ship and another to determine if you are on a collision course.

If anyone who heard "Angus" talk ever gets lost at sea, he should have a better understanding of how to go about getting back to his home port even if he is in a fog.

de - W9PSE

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FOR SALE: DX-100 B..... $135.00
Also various surplus items
Walter Derr, K9IXG
CH 4-6912

FOR SALE: Johnson Ranger Transmitter with Push to Talk, HQ-145-C with 100 KC Calibrater.
Jim Rosenbaum, K9OFK
CL 5-2145

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COVER STORY

The cathode-ray oscilloscope is an electronic device used to present a visual display of electrical phenomena. These phenomena include voltage and current amplitudes, wave forms and phase relationships. The "scope", as the oscilloscope is more popularly referred to, has become one of the most used instruments available to those seeking information in the world of electronics. This popularity may be attributed to the fact that the scope opens the door for the determination of component and equipment behavior under virtually all conditions of operation.

There are two major families of wave forms that are generally obtained with a scope. These are the sine wave family and the square wave family. There are other families of wave forms, of course. A few of these are the rectangular wave forms, the sawtooth wave forms and trapezoidal wave forms. However, the most basic are those in the sine wave and square wave families.

It may be said that the sine wave is the most basic wave form of all. It is the standard a-x form. The sine wave is important because it is the basis of all other wave forms. Generally the majority of non-sinusoidal voltages encountered in electronic circuits are composed of harmonically related frequency components. All wave forms which contain two or more frequency components may be said to be complex in character. The scope enables one to examine fundamental and second harmonic wave forms, third harmonic wave forms, half-sine wave forms, as well as additions of these forms.

The square wave form occurs quite frequently in electronic equipment. The application of a square wave voltage to capacitance or inductance results in a differently shaped current variation and vice versa. It is only when the square wave form voltage is applied to a pure resistance that the current has the same square wave shape. The square wave consists of a component of fundamental frequency and a infinite number of odd harmonics.

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(Cover Story continued)

Familiarity with the scope is a distinct advantage to every service technician, every engineer, every student in radio, television or any other branch of electronics.

Conversion of energy from one form to another is one of those everyday essentials that everyone of us takes pretty much for granted. Did you ever stop to think that the very progress of man is closely related to his ability to find, tap and convert sources of energy to usable power? One of the most important energy conversions in this "Space Age" involves the relation of heat to electricity or "thermoelectricity".

Thermoelectricity is about 150 years old, but research and development in the last few years may well point to a new breakthrough in understanding and application, both in generating electricity and in products - industrial and consumer- in everyday use.

A surprising thing about thermoelectricity is that it is a two-way affair. Just as heat can be used to produce electricity, so can electric current be used to produce changes in heat. This can be accomplished on a scale suitable for anticipated future use in major appliances such as refirgerators and stoves.

On the basis of what has been accomplished up to now, and the continuing progress indicated by research, it does seem possible that applications and devices similar to those already mentioned will come as welcome supplements to what we now have and as thoroughly new ways and means in our expanding electronic horizon.

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PRODUCT RESEARCH

Development of operational pattern-recognition devices is a most pressing need of current military and commercial technology.

A pattern-recognition device with the potential to fill this need is the SCEPTRON (Spectral Comparative Pattern Recognizer). It is a tiny assembly of vibrating optic fibers that can be self-programed to discern a desired audio signal from other audio signals or noise. Each fiber of the array carries a beam of light emitted from a source contained at the base. The fibers are mechanically driven by an electromechanical transducer activitated by the input signal. They respond in a manner characteristic of their resonant frequency and mechanical Q.

The beams of light emerging from the excited fiber tips pass hrough a photographic mask to a light-sensitive detector. The detector integrates the light received from all fibers for a time interval consistent with the application. The photographic mask is the adaptive memory of the device and is programed for a single category into which the signal may fall.

Classification of an incoming signal is accomplished by selecting the output from one of many Sceptron units, each programed for a single into which the signal may fall.

Significant features of the Sceptron are the fiber array and the photographic mask. The small size of the fiber beams (approximately 0.002 inch in diameter) permits thousands of them to be contained in a fraction of a square inch. Thus a complete coverage of any desired audio-frequency band is possible.

Many types of electromechanical driver elements could be used for excitation of the fiber arrays but piezo-electric ceremics have a special appeal because of simplicity and compactness.

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The key to the recognition of complex signals lies in the sophistication of signal programing or mask processing. The mask is the stored image of a signal or signal category. The variety of possible masks that can be prepared is extensive. Successful demonstrations of word recognition have been accomplished with arrays containing approximately 700 fibers and covering the frequency band from 250 cps to 5,000 cps.

Much more can be learned about the Sceptron by programing with more readily controlled and understood signals. Experiments are being conducted to recognize printed letters and other visual images.

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"EYE BALL NET"

Earl Kirk, W9OET, received the following communications from Ted Hunter, WØNTI. Mr. Hunter is Director of the Eye Bank Association of America. Anyone interested in this project should contact Earl Kirk or Pat Husk, K9EUQ.

Mr. Earl H. Kirk
9502 N. Delaware
Indianapolis 40, Indiana

December 6, 1962

Dear Earl:

Attached is a short article on, "The Eye Ball Net". In all probability this net would operate on either 75 or 40, on a three times per week basis. Preferably at 7 or 7:30 in the morning. The time and frequency would have to be arranged to suit those participating in the project.

Operation would be on SSB to start with. Possibly RTTY could be worked into this as it would be more reliable. It also would provide for a written record of all communications sent and received.

I really cannot tell you of the plans until I know the temperament of those participating. All I can say is that it is a most rewarding project in which hundreds of persons are kept from going blind each year.

The eyes are usually procured by Lions Clubs at no cost to the recipient. They do not have enough money available to provide a communication network either via teletype or telephone. As you can see this would amount to a very sizable communication bill and this is the reason that such a network is not now used.

The Lions Clubs of Indiana operate an eye bank on a state wide basis.

Sincerely yours,
Ted Hunter, WØNTI
Director Eye Bank Assc. of Am.

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The following is the article mentioned in the preceding letter.

THE EYE BALL NET

There are ten eye banks in the mid-west that are providing human eyes for corneal transplant operations at no cost to the recipients. These eyes must be taken from the donor within several hours after death and used for a corneal transplant operation within approximately 36 hours after death.

Quite frequently an emergency arises in which an eye is needed rather urgently. It would be the purpose of "the Eye Bank Net", to alert the other nine eye banks in the area to this need and to follow through with shipping information. Speed and reliability is of the essence.

These eye banks are located in Chicago, Indianapolis, Minneapolis, St. Louis, Columbia, Mo., Iowa City, Kansas City, Denver, Omaha, Minot, N. D., and are usually operated by Lions Clubs as the procurement agency.

Suppose a donors eye were needed in Indianapolis. Then the station in Indianapolis would alert the nine other stations on the net of the need and supply shipping data as soon as an eye had been received by any of the regional eye banks. A stop procurement message to be sent to all eye banks would be needed as soon as an eye had been procured.

Any amateur or amateurs would find this a most rewarding service.

In the Indianapolis area amateurs could contact Dr. Merrill Grayson for further information on saving sight through the corneal transplant operation technique. Might make a good club project.

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The Eye Ball Net) (continued)

A discussion of this project will be held on Thursday, December 20, 1962 at 8:00 A.M. A report of the discussion will be contained in the next issue of AMA-CHEWER.

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GRAHAMS SPECIALS OF THE MONTH

Johnson Ranger Transmitter	$165.00
Hammarlund HQ-170-C.....	$275.00
4 Johnson 6n2 Transmitters.....EACH.....	$ 79.50
2 Clegg 99ers.....EACH.....	$134.50
Hallicrafter HT-40.....	$ 79.95
Mosely CM-1/with speaker.....	$165.00
Collins KWM-1/with 516-E1 Power Supply.....	
.....LIKE NEW.....	$595.00
2 Clegg Interceptor Recievers.....EACH.....	$385.00
Elmac AF68/PMR-8/M1070....Complete Mobile	
....or Base Station.....S A VE.....	$360.00
Hammarlund HQ-100.....	$129.50
Johnson Courier....Linear Amplifier.....	$159.00
Hammarlund HX-500..SPECIAL CASH PRICE ONLY.	
NO TRADE.....LIKE NEW.....	$495.00
Hallicrafter SX-111.....	$225.00
Lafayette HE 45-A ... 6 meter tranceiver.....	$ 99.50

MERRY CHRISTMAS TO ALL OF YOU FROM
ALL OF US AND MAY YOUR
NEW YEAR BE A
HAPPLY AND
PROSPEROUS
ONE

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HOW'S YOUR THEORY

When in the course of human events it becomes necessary to prove you are far more intelligent than the next man, try throwing these into the conversation:

Calculate the ratios of the saturation emission currents from Tungsten, Thoriated-Tungsten, and Barium oxide-coated cathodes for normal operating temperatures of 2500, 1900, and 1000 degrees Kelvin.

A certain vacuum diode has a emission of 10 ma. for a plate potential of 50 volts. Assuming that Child's Law holds for the tube, calculate the saturation-emission current for 20 volt steps from zero to 100 volts on the plate.

A coil with an air core has an effective resistance of 28 ohms and inductance of 48 mh. at 2500 cycles. What is the Q of the coil?

A full-wave rectifier supplies power to a 4500 ohm resistor. The transformer voltage is 300 volts (r.m.s.) each side of center tap. Assume that each diode has a constant resistance of 450 ohms when conducting and that the total transformer resistance is 100 ohms. Calculate (a) the d.c. load voltage; (b) the d.c. load current; (c) the a.c. load voltage; (d) the per-cent of ripple.

Suggest a suitable filter for the power supply of the above problem if the ripple is not to exceed 0.25 per-cent.

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FREQUENCY CHART

Designations	Abbrevia-tions	Frequencies	Wavelengths (In Meters)
Radio Frequencies:	R.F.		
Very Low	V.L.F.	10 to 30 KC	30,000 to 10,000
Low	L.F.	30 to 300 KC	10,000 to 1,000
Medium	M.F.	300 to 3,000 KC	1,000 to 100
High	H.F.	3,000 to 30,000 KC	100 to 10
Very High	V.H.F.	30,000 to 300,000 KC	10 to 1
Ultra High	U.H.F.	300,000 to 3,000,000 KC	1 to 0.1
Super High	S.H.F.	3,000,000 to 30,000,000 KC	0.1 to 0.01
Audio Frequencies	A.F.	30 to 15,000 Cycles	
Video Frequencies	V.F.	30 to 5,000,000 Cycles	